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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/711,593	09/28/2004	Mark D. Fairchild	P04-01	5592
25759	7590	06/25/2007		
JOHN J. ELNITSKI, JR. 225 A SNOWBIRD LANE BELLEFONTE, PA 16823			EXAMINER LEE, BENJAMIN P	
			ART UNIT 3641	PAPER NUMBER
			MAIL DATE 06/25/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

### Application No.

10/711,593

### Applicant(s)

FAIRCHILD, MARK D.

### Examiner

Benjamin P. Lee

### Art Unit

3641

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 25 May 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) 18-21 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 4, 6 and 8 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

1. Applicant has amended claim 1.

### *Response to Arguments*

2. With respect to Applicant's arguments and comments pertaining to the rejection of claims 1, 2, 4, 6 and 8, Examiner respectfully assert that Applicant has misinterpreted the basis of the outstanding rejections. During the telephonic interview on 1/26/2007, the "attendees" (Applicant, Examiner and Senior Examiner) discussed the rejections and the use and perceived definition of "induced drag" and "induced yaw". However, there was **no agreement** reached in relation to term usage, the applied reference, or the current or future status of this application or any corresponding office action. As stated in interview, Examiner fully understands the art specific difference between "Induced Drag" and inducing drag. Applicant has asserted that Examiner has misinterpreted the meaning of "Induced Drag" and therefore improperly applied the Richard et al. reference. However, Examiner respectfully maintains, as stated in interview and non-final rejection, that the end plates disclosed by Richard et al are capable of, to at least some degree, influencing the movement of wingtip vortices from the bottom of the wing to the top (component of "Induced Drag") thus creating a "net *induced drag* differential". Examiner has never indicated that the term "Induced Drag" has been interpreted as related to parasite drag or applied in the context of a verb. In keeping with the assigned definition of the term "induced yaw" from Applicant's

specification, Examiner respectfully maintain that the inboard wing "to the turn" disclosed by Richard et al "experiences" a higher Induced Drag, to at least some degree, than the outboard wing "to the turn", because it is Examiner's opinion that the when the end plate of Richard et al is angled out as shown in Richard et al fig. 3, the higher pressure under the wing will have an easier path around the end plate/wingtip and thus induce a higher degree of downwash (resulting in at least some increase in Induced Drag). Further, Examiner maintains that the Richard et al patent merely need to be capable of overcoming the lowest potential level of adverse yaw (smallest amount of aileron deflection). Examiner believes that it is reasonable to assume that the adverse yaw created by the smallest possible aileron deflection can be overcome by manipulating the Richard et al device as shown in fig. 3 as described by Richard et al.

### ***Claim Rejections - 35 USC § 102***

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 2, 4, 6 and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Richard et al. (U.S. Patent 2565990).

4. In regards to claim 1, Richard et al disclose a method of controlling an aircraft in a turn without the use of a rudder by producing induced yaw, comprising creating a net induced drag differential between an inboard wing to the turn and an outboard wing to the turn, the net induced drag differential is created in such a manner that the net

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induced drag differential overcomes adverse yaw produced by the outboard wing (col. 1, lines 18-53). Note that Richard et al disclose manipulating "end-plates" on each wing to induce yaw. Although these "end-plates" do not necessarily increase the effective aspect ratio of the wings, they do create a moment force via an induced drag differential between the inboard and outboard wings. **The induced drag is an inherent consequence of allowing stronger wing-tip vortices to form from the bottom of the inboard wing to the top.** Note that there is no limitation on the level of adverse yaw produced and it is reasonable to assume that a relatively small aileron deflection will create a comparably small degree of adverse yaw.

5. In regards to claim 2, Richard et al disclose that the net induced drag differential is produced by controlling the aircraft such that the induced drag experienced by the inboard wing is greater than the induced drag experienced by the outboard wing (see fig. 3 following). Note that the left (inboard) wing "end-plate" is pivoted and the right ("outboard") wing "end-plate" is in a "neutral" position. The pivoted "end-plate" induces greater drag than the "neutral" plate.

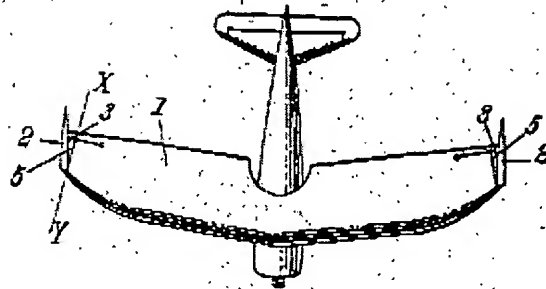
6. In regards to claim 4, Richard et al disclose spoiling a tip vortex on the outboard wing to reduce downwash coming off the outboard wing and reduce the induced drag experienced by the outboard wing; and increasing a tip vortex on the inboard wing to increase downwash coming off the inboard wing and increase the induced drag experienced by the inboard wing (col. 1, lines 18-53). Note that the neutrally positioned

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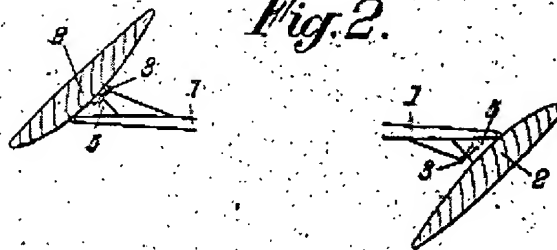
"end-plate" on the right ("outboard") wing spoils or blocks the wingtip vortex reducing downwash and the pivoted "end-plate" on the left ("inboard") wing allows a wingtip vortex increasing downwash.

7. In regards to claims 6 and 8, Richard et al disclose providing adaptive control surfaces as part of the inboard and outboard wings to form a variable planform to affect the induced drag of each of the inboard and outboard wings and produce the net induced drag differential to overcome adverse yaw produced by the outboard wing (see fig. 3 following). Although figure 3 is a frontal view of the plane, it is clear and inherent that the manipulation of the "end-plates" constitutes a variable planform. As previously stated, the manipulation of the "end-plates" induces the drag differential.

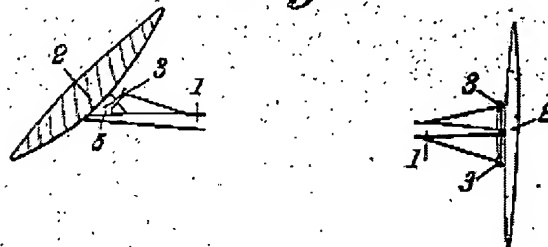
*Fig. 1.*



*Fig. 2.*



*Fig. 3.*



**Allowable Subject Matter**

8. Claims 3, 5, 7 and 9-17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The following is a statement of reasons for the indication of allowable subject matter: In regards to claims 3, 10, 11 and

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13, the closest prior art fails to disclose a method that includes, simultaneously increasing the effective aspect ratio (increasing the wing span) of the outboard wing to reduce downwash coming off the outboard wing and decreasing the effective aspect ratio (decreasing the wing span) of the inboard wing to increase downwash coming off the inboard wing.

### ***Summary/Conclusion***

9. Claims 1, 2, 4, 6 and 8 are rejected. Claims 3, 5, 7 and 9-17 are objected to.

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

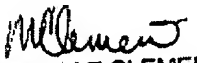
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Benjamin P. Lee whose telephone number is 571-272-



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8968. The examiner can normally be reached between the hours of 8:30am and 5:00pm on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Carone can be reached on 571-272-6873. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
MICHELLE CLEMENT  
PRIMARY EXAMINER